Remarks

The applicant appreciates the careful examination the Examiner has given to this application and believes the claims as amended satisfy the Examiner's concerns.

Claims 1-38 are pending in this application and have been amended by introducing additional limitations to better define the invention.

With regard to Section 3 of the Action and the IDS submitted on February 3, 2004, please note that the certified copy of the priority document is on pages 14 to 73 of the 02-03-2004 NPL document on the Image file wrapper. Page 13 of the 02-03-2004 is the Declaration-supplemental priority data sheet for the Canadian application 2,440,173 filed on September 4th, 2003. Applicant respectfully requests acknowledgment of the claim for priority under 35 U.S.C. § 119.

Drawings

With regard to Section 4 of the Action, Figures 5-7 have been amended to comply with 37 CFR 1.84(p)(4) and overcome the Examiner's objection by re-drawing the contents of the figures for clarity and making the reference characters and numbers legible.

With regard to Section 5 of the Action:

Figure 1 has been amended to comply with 37 CFR 1.84(p)(5) by deleting the reference character 165 from Figure 1.

Figure 5 has been amended to comply with 37 CFR 1.84(p)(5) by replacing the reference character 143 by the reference character 543 in Figure 5.

Figures 14 and 15 have been amended to comply with 37 CFR 1.84(p)(5) by deleting the reference characters 1400 and 1500 from Figures 14 and 15, respectively.

Specifications

With regard to Section 8 of the Action, the paragraphs [0009] to [0037] have been amended to comply with 37 CFR 1.73 and overcome the Examiner's objection.

The paragraphs [0060] to [0069], [0087], [0094], [0097], [0151], [0168], [0169], and [0172] have been amended to correct editorial errors.

The ABSTRACT has been amended for clarifying the nature and gist of the invention.

Claim Rejections under 35 USC §112

With regard to section 10 of the Action, claims 5 and 35 have been amended to comply with the second paragraph of 35 U.S.C. 112 by adding the definition of the abbreviations.

Applicant Arguments with regard to the rejection under 35 USC §101

With regard to section 12 of the Action, claims 1-38 were rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Regarding Claims 1-19:

Claim 1 as amended provides an operations, management, capacity, and services (OMCS) tool for assessing business solutions comprising alternative network architectures and management processes for a telecommunications network, paragraphs [0060] to [0069] and Figure 1 of the present invention.

The tool comprises means for inputting data and options for plurality of network architectures and management processes by an analyst; and means for engineering and costing the plurality of network architectures and the management processes. The management processes create and establish management networks that are required for managing the plurality of network architectures for the business

solutions. The management processes comprise network management processes and service and customer management processes as well as their associated sub-processes.

The tool further comprises means for validating and calibrating the input data and options and the costs for the plurality of network architectures and the management processes for the business solutions. The tool comprises means for determining, based on the costs of the plurality of network architectures and the management processes, business parameters for the business solutions; and means for storing or displaying the business parameters for the business solutions for the telecommunications network.

Accordingly, the subject matter of the present invention discloses a tool for assessing business solutions comprising **two levels of networks**: (1) a network architecture that carries the telecommunications services (e.g., voice, data, etc.) and delivers the services to the end users; and (2) a management network for managing the network architecture wherein the management network comprises management processes and sub-processes for network, service, and customer management. The network, service, and customer management processes and sub-processes are modeled and engineered based on the Service Provider operating environment, paragraphs [0101] to [0138] and Figures 8 to 14 of the present invention.

One advantage of the OMCS tool is that it enables the analyst to input data and options for plurality of network architectures and management processes for business solutions for a telecommunications network. The options comprise technology alternatives for the network architectures and choices for the management networks for managing the network architectures for the business solutions. The management networks comprise the network management processes and the service and customer management processes. These management processes replicate today's operations and management networks for Service Providers.

Another advantage is that the OMCS tool comprises means for engineering network management processes; and service and customer management processes; and means for determining a management processes cost comprising a network management processes cost and a service and customer management processes cost for the business solution. Hence, the operations costs for business

solutions having mesh network architecture (e.g., Figure 3 of the present invention) or ring network architecture (e.g., Figure 4 of the present invention) would depend on the cost of the management processes engineered for managing the mesh or ring network architecture. Accordingly, the analyst, and the Service Provider, would be able to compare technology alternatives for the network architectures and management strategies for the business solutions. Moreover, the analyst would be able to quantify the savings of one business solution versus another and identify the areas for cost reduction.

Additionally, by comparing the business solutions, the analyst would be able to determine the business solution for optimizing the operations and management for a selected network architectural technology for the telecommunications network.

Claim 1 as amended defines a tool (an apparatus) a statutory subject matter under 35 U.S.C. 101.

Claims 2-19 are dependent claims and each of the dependent claims has all the limitations of the parent amended claim 1. Claims 2-19 have been amended by introducing additional limitations to better define the invention.

Regarding Claims 20-30:

Claim 20 as amended provides a computer-readable medium containing instructions for directing a computer to perform a process for assessing business solutions comprising alternative network architectures and management processes for a telecommunications network. The medium comprises means for causing the computer to receive data and options for plurality of network architectures and management processes from an analyst; and means for causing the computer to engineer the plurality of network architectures and the management processes based on the received data and options. The medium comprises means for causing the computer to receive costs for equipment and management processes and means for causing the computer to calculate, based on the costs of the plurality of network architectures and the management processes, business parameters for the business solutions; and to store or output the business parameters for the business solutions for

the telecommunications network, paragraphs [0070] to [0077] and [0086] to [0139] and Figures 2, 5-7, and 8-14 of the present invention.

The amended claim 20 defines a computer-readable medium containing a program and data structure that when used in a computer, causes that computer to perform the functions of the tool (an apparatus) of the amended claim 1. Hence, the computer-readable medium is a statutory subject matter under 35 U.S.C. 101.

Claims 21 to 30 are dependent claims and each of the dependent claims has all the limitations of the parent amended claim 20. Claims 21-30 have been amended by introducing additional limitations to better define the invention.

Regarding Claims 31-38:

Claim 31 as amended provides a computer-implemented method for assessing business solutions comprising alternative network architectures and management processes for a telecommunications network.

The method comprises the steps of inputting data and options for plurality of network architectures and management processes by an analyst; and engineering the plurality of network architectures and the management processes based on the input data and options. The method further comprises the steps of determining suppliers' equipment and management processes costs. The management processes comprise network, and service and customer management processes as well as their associated sub-processes for managing the plurality of network architectures, paragraphs [0101] to [0138] and Figures 8 to 14 of the present invention.

The method comprises the steps of determining, based on the costs of the plurality of network architectures and the management processes, business parameters for the business solutions; and storing or displaying the business parameters for the business solutions for the telecommunications network, paragraphs [0144] to [0151] and Figure 17 of the present invention.

The amended claim 31 defines a computer-implemented method that is employed by the tool of the amended claim 1 and the steps in the method of the amended claim 31 are analogous to the means functions in the tool of the amended

claim 1. Hence, the computer-implemented method of the amended claim 31 is a statutory subject matter under 35 U.S.C. 101.

Claims 32-38 are dependent claims and each of the dependent claims has all the limitations of the parent amended claim 31. Claims 32-38 have been amended by introducing additional limitations to better define the invention.

It is respectfully submitted that the non-statutory subject matter rejection of the Examiner has been traversed. Accordingly, it is requested that the rejection be removed and the claims be allowed.

Applicant Arguments with regard to the rejection under 35 USC §102

With regard to section 14 of the Action, claims 1, 2, 5, 20, 28, 31, 32, 35, and 36 were rejected under 35 U.S.C. 102 (e) as being anticipated by Ngi et al., U.S. Patent Application Publication Number 2003/0158765 A1 (hereinafter referred to as Ngi).

Ngi

Ngi teaches an end-to-end network analysis tool that allows a network consultant to integrate link budget planning calculations with the network planning and business modeling phases of customer proposal generation. This integration provides for significantly reduced calculation times, more accurate business proposals, and the ability to model many different network scenarios. The benefits, savings, reduction in operational and capital costs and all the other elements of network savings relating to business parameters that are discovered may be summarized qualitatively and quantitatively in reports that may be presented to a customer company's senior management, in detailed or summary formats. This allows a network consultant to assist customers in migrating to a more profitable, efficient, effective, and end-user driven network, while providing a customer with proof in the strength of their proposed solution and ability to deliver a low cost solution that maximizes the customer's return on investment, (Abstract, Ngi).

Regarding Claim 1:

Claim 1 as amended provides an operations, management, capacity, and services (OMCS) tool for assessing business solutions comprising alternative network architectures and management processes for a telecommunications network, paragraphs [0060] to [0069] and Figure 1 of the present invention.

The OMCS tool comprises means for inputting data 110 by an analyst (or a consultant) comprising data and options for plurality of network architectures and management processes; means for engineering the plurality of network architectures

120 based on the input data and options; and means for determining suppliers' equipment costs 140 for the plurality of network architectures.

The OMCS tool comprises means for engineering the management processes 130 based on the input data and options, wherein the management processes comprising network management processes and service and customer management processes for managing the plurality of network architectures; and means for determining suppliers' management processes costs 150 for the network management processes and the service and customer management processes.

The tool also comprises means for validating and calibrating data 155 for the plurality of network architectures and the management processes; means for analyzing and determining business parameters for the business solutions 160, based on the costs of the plurality of network architectures and the management processes; and means for reporting (storing or displaying) the business parameters for the business solutions 170 for the telecommunications network.

One advantage of the OMCS tool is that it enables the analyst (or consultant) to input data and options for plurality of network architectures and management processes for business solutions for a telecommunications network. The options comprise technology alternatives for the network architectures and choices for the management networks for managing the network architectures for the business solutions. The management networks comprise the network management processes and the service and customer management processes, paragraphs [010] to [0138] and Figures 8 to 14 of the present invention. These management processes replicate today's operations and management networks for Service Providers (or customers).

Another advantage is that the OMCS tool comprises means for engineering network management processes; and service and customer management processes; and means for determining a management processes cost comprising a network management processes cost and a service and customer management processes cost for the business solution. Hence, the operations costs for business solutions having fully mesh network architecture or ring network architecture would depend on the costs of the management processes engineered for managing the fully mesh or ring network architecture. Accordingly, the Service Provider (or customer)

would be able to compare technology alternatives for the network architectures and management strategies for the business solutions. Moreover, the Service Provider (or customer) would be able to quantify the savings of one business solution versus another and identify the areas for cost reduction.

Advantageously, by comparing the business solutions, the Service Provider (or customer) would be able to determine the business solution for optimizing the operations and management for the selected network architectural technology for the telecommunications network.

Ngi (paragraph [0031]) states:

"The present invention advantageously provides an end-to-end analysis tool that allows a network consultant to create custom specific models for each customer. Advantageously, in an embodiment of the present invention, the present invention comprises an interactive computer-implemented program that starts from the network planning phase all the way through to the end-application revenue enhancement phase. As such, embodiments of the present invention assist a customer in migrating to a more profitable, efficient, effective and end-user driven network."

Ngi (paragraph [0032]) states:

"In contrast to proposals generated by conventional processes and means, embodiments of the present invention allow a network consultant to provide a customer with proof in the strength of their evaluations, models, and/or product offerings and deliver a low cost solution that maximizes the customer's return on investment. This is advantageously provided by the fact that embodiments of the present invention permit a network consultant to accurately model existing customer networks, and also to compare such existing networks to competitors' networks and to proposed networks."

Hence, Ngi teaches network planning based on customer (or Service Provider) demand using generic network model to demonstrate the benefits of one network architecture or topology versus other network architecture or topology, (paragraphs [0031] and [0032] of Ngi). The network architecture or topology includes an identification of nodes and physical links in the topology. The network architecture

is determined based on equipment list costs as produced by the link budget, (paragraphs [0007], [0016], [0018], [0021], [0022], and [0023] of Ngi). Accordingly, the main focus of the tool taught by Ngi is **only** on offering new products to the customers (or Service Providers) and comparing the costs of the new products to the existing products in a network architecture or topology.

Ngi (paragraph [0033]) states:

"The benefits, savings, reduction in operational and capital costs and all the other elements of network savings that are preferably discovered according to embodiments of the present invention are advantageously summarized in qualitative and quantitative fashion in reports that may be presented to a customer company's senior management. An Executive Summary may be provided for all areas of a network analysis. For example, an Executive Summary may be presented for Network Architecture Costs, Cost to Build, Risk Analysis, Cost/Benefit Analysis and many other areas. Additionally, a detailed analysis and set of recommendations may be provided based on the calculated business parameters to help a customer understand all the advantages that the network consultant's solution brings to the customer."

Ngi (paragraph [0097]) states:

"In accordance with the description above, embodiments of the present invention will enable a customer to properly understand business parameters such as the operational and capital costs associated with network modeling exercises. Modeling a customer network according to the generic network model described above allows a network consultant to analyze opportunities to increase untapped revenue streams, investigate areas of previously unrealized savings and bring to light areas of reduced operational and capital expenditures in a customer's network. Advantages related to a network consultant's solution might become quite evident when the network results are modeled and the business parameters related thereto are then compared to any competitive or existing solution. "

Hence, the tool taught by Ngi teaches business solutions for network architecture or topology, wherein the capital expenditure (CAPEX) is described as architecture costs, costs to build, own and grow; and the operational expenditure

(OPEX) is described as architecture costs, costs to build, own and grow, (paragraphs [0033] and [0097] and Table 2 of Ngi). Accordingly, the costs for managing and operating the network architecture or topology are excluded from the analysis and the customer (or Service Provider) would not be able to identify the areas for enhancing or reducing the network operating cost. Reducing the operating cost of a network is critical to the survival of any Service Provider because, for example, managing and operating of a fully mesh network topology is more expensive than managing and operating of a ring network topology.

Further, the tool taught by Ngi would not enable the customer (or Service Provider) to assess and quantify the difference between operating and managing of one network topology and another. Understanding the cost of the new network architecture or topology without understanding the cost of the management and operations of the new network architecture or topology is economically critical to evolving the services and business for the customer (or Service Provider).

Furthermore, Ngi (paragraph [0119]) states: "Table 2 below illustrates some of the other possible business parameters that may be calculated, and upon which advanced network business reports may be generated."

Table 2 of Ngi discloses that "the capital expenditure is described as the capital cost breakdown for build, own, grow", and measured by "total capital cost requirement", and the operational expenditure is described as the operational cost breakdown for build, own, grow", and measured by "total operational cost requirement". The other possible business parameters include Return On Assets (ROA), Return On Investment (ROI), Net Present Value (NPV), Total Cost of Operation (TCO), and Discounted Cash Flow which is described as Time value of money.

Thus, the CAPEX and OPEX taught by Ngi are described as the capital cost and operational cost breakdown to build, own, and grow of a network architecture or topology.

There is no mention or suggestion that the network analysis tool taught by Ngi comprises means for selecting, engineering, or costing management processes

for managing the optical network architecture or topology. The tool taught by Ngi teaches network planning based on customer demand using generic network model to demonstrate the benefits of one network architecture or topology versus other network architecture or topology. The capital expenditure and the operational expenditure are described as architecture costs, costs to build, own and grow. Hence, the costs for managing and operating the network architecture or topology are excluded from the total cost of the business solution.

Consequently, the key advantages of the tool of the amended claim 1 over the tool taught by Ngi are, among others, the tool of the amended claim 1 comprising: (1) means for selecting, engineering, and costing plurality of network architectures having various technologies and management processes for managing the plurality of network architectures; (2) means for determining a network architecture cost and a leasing cost for each network architecture of the plurality of network architectures; (3) means for determining a management processes cost for each of the management processes, wherein the management processes comprising network, service and customer management processes, and the management processes cost is computed based on whether the operations of the network, service, and customer management processes is performed manually (e.g., using paper and pen or phone), using mechanized systems (or operations support systems (OSS)) or both based on the Service Provider operating environment; and (4) means for determining business parameters for the business solutions comprising OPEX, wherein the OPEX comprises a management processes cost, a leasing cost, and sales, general and administration (SG&A) expenses; CAPEX, wherein the CAPEX comprises a network architecture cost, taxes, interests and depreciation and amortization (D/A) expenses; and other financial statistics.

Hence, the costs for managing and operating the network architecture or topology are integrated with the cost of the network architecture in the total cost of the business solution in the present invention.

Accordingly, for at least the reason that Ngi neither describes nor suggests these limitations, it is requested that the rejection be removed.

Regarding Claim 2:

As discussed above, Ngi fails to disclose several of the amended claim 1 limitations.

Claim 2 is dependant on the amended claim 1 and has all the limitations of the amended claim 1. Claim 2 has been amended by introducing additional limitations to better define the invention.

The amended claim 2 provides: "…..means for inputting traffic data; customer data; and financial and labour data."

Accordingly, for at least the reason that Ngi neither describes nor suggests these limitations, it is requested that the rejection be removed.

Regarding Claim 5:

As discussed above, Ngi fails to disclose several of the amended claim 1 limitations.

Claim 5 is a dependant claim and has all the limitations of the parent amended claim 1. Claim 5 has been amended by introducing additional limitations to better define the invention.

The amended claim 5 provides "….the network architecture having one or more of the following technology: time division multiplexing (TDM), asynchronous transfer mode (ATM), frame relay (FR), Internet protocol (IP), virtual private network (VPN), multi protocol label switching (MPLS), and optical Ethernet including fiber, synchronous optical network (SONET), resilience packet ring (RPR), and dense wavelength division multiplexing (DWDM)."

Ngi (paragraph [0055]) states "……These models may include traditional SONET (Synchronous Optical NETwork), NG-SONET (Next Generation SONET) and MSPP (Multi-Service Provisioning Platform) solutions….."

The traditional SONET, NG-SONET and MSPP network architectures are well known in the art and many prior art tools, such as Ngi, are disclosed for planning of these architectures.

Ngi **does not** disclose engineering and costing of network architecture such as time division multiplexing (TDM), asynchronous transfer mode (ATM), frame relay (FR), Internet protocol (IP), virtual private network (VPN), multi protocol label switching (MPLS), and optical Ethernet including fiber, synchronous optical network (SONET), resilience packet ring (RPR), and dense wavelength division multiplexing (DWDM).

Ngi **does not** disclose determining the capital expenditure (CAPEX) of these architectures, wherein the CAPEX comprises a network architecture cost, taxes, interests and depreciation and amortization (D/A) expenses.

Ngi teaches network planning based on customer demand using generic network model to demonstrate the benefits of one network architecture or topology versus other network architecture or topology. The modeling focuses on traditional SONET and next generation SONET for optical networks. The capital expenditure and the operational expenditure are described as architecture costs, costs to build, own and grow.

There is no mention or suggestion that the network analysis tool taught by Ngi discloses the claimed invention limitations.

Accordingly, for at least the reason that Ngi neither describes nor suggests these limitations, it is requested that the rejection be removed.

Regarding Claim 20:

Claim 20 as amended provides a computer-readable medium containing instructions for directing a computer to perform a process for assessing business solutions comprising alternative network architectures and management processes for a telecommunications network.

The medium comprises means for causing the computer to receive data and options for plurality of network architectures and management processes from an analyst. The medium comprises means for causing the computer to engineer the plurality of network architectures based on the received data and options; and means for causing the computer to receive suppliers' equipment costs for the plurality of network architectures.

The medium comprises means for causing the computer to engineer the management processes based on the received data and options, wherein the management processes comprising network management processes and service and customer management processes for managing the plurality of network architectures; and means for causing the computer to receive suppliers' management processes costs for the network management processes and the service and customer management processes.

The medium also comprises means for causing the computer to validate and calibrate the received data and options and the costs for the plurality of network architectures and the management processes; means for causing the computer to calculate, based on the costs of the plurality of network architectures and the management processes, business parameters for the business solutions; and means for causing the computer to store or output the business parameters for the business solutions for the telecommunications network.

The data structure for the computer-readable medium for the OMCS tool of Figure 1 is described in paragraphs [0070] to [0077] and [0086] to [[0100] and shown in Figures 2 and 5 to 7 of the present invention. The data structure for the management processes for the management networks that are required for managing the network architectures for the business solutions for the telecommunications network is described in paragraphs [0101] to [0138] and shown in Figures 8 to 14 of the present invention.

The amended claim 20 defines a computer-readable medium containing a program and data structure that when used in a computer, causes that computer to perform the functions of the OMCS tool of the amended claim 1.

Ngi (paragraphs [0028]-[0029]) teaches a computer program product comprising a computer-readable memory and a computer data that when used in a computer, causes that computer to perform the functions of the tool taught by Ngi for network planning based on customer demand using generic network model to demonstrate the benefits of one network architecture or topology versus other network architecture or topology. The modeling focuses on traditional SONET and

next generation SONET for optical networks, (paragraph [0055]). The network architecture or topology includes an identification of nodes and physical links in the topology. The network architecture is determined based on equipment list costs as produced by the link budget. The capital expenditure and the operational expenditure are described as architecture costs, costs to build, own and grow, (paragraphs [0031]-[0033] and [0097] and Table 2 of Ngi).

Accordingly, Ngi **does not** teach the limitations of the amended claim 20 because the computer-readable medium of the amended claim 20 contains instructions for directing a computer to perform a process for assessing business solutions comprising alternative network architectures and management processes for a telecommunications network. The computer-readable medium and data structure of the amended claim 20 comprising means for causing the computer to perform the functions of the OMCS tool of the amended claim 1 and Ngi fails to disclose several of the amended claim 1 limitations, as discussed earlier.

Accordingly, for at least the reason that Ngi neither describes nor suggests these limitations, it is requested that the rejection be removed.

Regarding Claim 28:

As discussed above, Ngi **does not** teach the limitations of the amended claim 20.

Claim 28 is a dependant claim and has all the limitations of the parent amended claim 20. Claim 28 has been amended by introducing additional limitations to better define the invention.

The amended claim 28 provides"….. means for causing the computer to display in tables and graphical charts the business parameters for said business solutions over said pre-determined study period."

Ngi (paragraph [0114]) states:

"FIG. 16 illustrates a second example of an advanced network business report. In the example of FIG. 16, two types of equipment are compared at a node level. Using an advanced network business report as shown in FIG. 16, a network

consultant is able to demonstrate the node-level cost savings that may be achieved by implementing the network consultant's network proposal. The exemplary advanced network business report in FIG. 16 comprises a graphical area 1610 and a plurality of text or information areas, although any combination of such types of areas could alternatively be used to convey advanced network business report information. In the particular example of FIG. 16, it is shown diagrammatically in the graphical area 1610 that one shelf of the node included in the network consultant's proposal is able to provide the same functionality as four shelves plus additional equipment in the competitor's proposal. A summary information area 1621 preferably provides a summary, textual or otherwise, of a comparison between a network consultant's proposal and one or more other proposals, preferably providing information regarding advantages of the network consultant's proposal. A detailed information area 1622 preferably provides a more detailed comparison of the networks being compared, as is illustrated in the textual information shown in FIG. 16. A limitation summary information area 1623 preferably provides an elaboration regarding limitations or drawbacks associated with a network configuration, such as a competitor's configuration, with which a network consultant's proposal is being compared."

Hence, the main focus of the tool taught by Ngi, (as per Fig 16 of Ngi), is on using generic network model to demonstrate the benefits of one network architecture or topology versus other network architecture or topology and to compare the costs of the network architecture or topology to the costs of the other network architecture or topology.

In contrast, the present invention focuses on the management and operations of the network architecture and demonstrates the benefits of one business solution versus other business solutions, wherein each business solution comprises network architecture and its management network. For example, Figure 18 of the present invention illustrates the management processes cost for five network architectures (ARCH1 to ARCH5).

The management processes cost comprises a network management processes cost and a service and customer management processes cost.

The network management processes cost comprises the cost of performing one or more of the following network management processes: installation, testing and repair, inside and outside maintenance, network engineering and provisioning for all network elements in the network architecture or topology and is measured as *a process cost per network element*.

The service and customer management processes cost comprises the cost of performing one or more of the following service and customer management processes: performance management (PM), fault management (FM), and service activation and provisioning (SAP), network inventory management (NIM), work order management (WOM), and customer relationship management (CRM) for all links in the network architecture or topology and is measured as *a process cost per link*.

The process cost per network element or the process cost per link are measured based on whether the operations of the process is performed manually, using mechanized systems (or OSS), or both based on the Service Provider operating environment, paragraphs [0101] to [0138] and Figures 8 to 14 of the present invention.

Ngi (paragraph [0123]) states:

"As an example of implementation, FIG. 17A and 17B illustrate examples of advanced network business reports based on total network co-location cost for two networks. The actual co-location costs shown in FIG. 17A are calculated in accordance with the method described in relation to FIG. 14. In the report of FIG. 17A, a tangible tabular result is presented illustrating the operational savings achieved with the network consultant's solution over an existing solution or competitor's solution. In the report of FIG. 17B, a tangible graphical result is presented illustrating a comparison of the total network co-location cost of the network consultant's network and its competitor's network. These output reports are immediately useful to both the customer and network consultant in evaluating the strength of the network consultant's solution.

Ngi (paragraph [0124]) states:

"As another example of implementation, FIG. 18 illustrates an example of an advanced network business report based on total network co-location cost for three networks: a network consultant's proposal; a competitor's proposal, preferably based on a next generation network; and an existing conventional, or classic, proposal, preferably based on an existing configuration. FIG. 18 shows that an advanced network business report can comprise characterizations of one or more business parameters. In this particular example, graphs relating to the following business parameters are presented: total cost to build, consisting of total capital expenditures (CAPEX) and operational expenditures (OPEX); shelf and card installs; and network capacity vs. service bandwidth. The report shown in FIG. 18 is a useful and tangible result presented in a format that allows a comparison of a plurality of network proposals with respect to a plurality of business parameters."

Hence, Ngi (paragraphs [0123]-[0124]) compares the costs of two network architectures and three network architectures, respectively. The modeling focuses on traditional SONET and next generation SONET for optical networks, (paragraph [0055]). The network architecture is determined based on equipment list costs as produced by the link budget. The capital expenditure and the operational expenditure are described as architecture costs, costs to build, own and grow, (paragraphs [0031]-[0033] and [0097] and Table 2). Thus, the costs for managing and operating the network architecture are excluded from the analysis and the customer (or Service Provider) would not be able to identify the areas for enhancing or reducing the network operating cost.

There is no mention or suggestion that the network analysis tool taught by Ngi selects, engineers, or costs management processes for managing any of the network architectures in Figures 17A, 17B, and 18 of Ngi. Further, the tool taught by Ngi **does not** describe or compute the CAPEX, OPEX, and the other financial statistics as claimed in the present invention.

Accordingly, for at least the reason that Ngi neither describes nor suggests these limitations, it is requested that the rejection be removed.

Regarding claim 31

Claim 31 as amended provides a computer-implemented method for assessing business solutions comprising alternative network architectures and management processes for a telecommunications network, paragraphs [0144] to [0151] and Figure 17 of the present invention.

The method comprises the steps of inputting data and options for plurality of network architectures (block 1720) and management processes (block 1730) by an analyst.

The method comprises the steps of engineering the plurality of network architectures (block 1715) based on the input data and options of (block 1720); and determining suppliers' equipment costs (block 1725) for the plurality of network architectures.

The method comprises the steps of engineering the management processes (block 1735) based on the input data and options of (block 1730), wherein the management processes comprising network management processes and service and customer management processes for managing the plurality of network architectures; and determining suppliers' management processes costs (block 1745) for the network management processes and the service and customer management processes.

The method comprises the step of determining business parameters for the business solutions (block 1760), based on the costs of the plurality of network architectures and the management processes.

The method comprises the steps of validating and calibrating the data and options and the costs, including analyzing, adjusting and updating the data (block 1740), (block 1770) and (block 1780), for the plurality of network architectures and the management processes. The method comprises the step of reporting, storing or displaying the business parameters for the business solutions for the telecommunications network (block 1790).

Advantageously, the computer-implemented method enables the analyst (or consultant) to input data and options for plurality of network architectures and management processes for business solutions for a telecommunications network. The options comprise technology alternatives for the network architectures and choices for

the management networks for managing the network architectures for the business solutions. The management networks comprise the network management processes and the service and customer management processes. These management processes replicate today's operations and management networks for Service Providers.

Further, the computer-implemented method comprises the steps of engineering network management processes; and service and customer management processes; and determining a management processes cost comprising a network management processes cost and a service and customer management processes cost for the business solution. Hence, the operations costs for business solutions having fully mesh network architecture or ring network architecture would depend on the costs of the management processes engineered for managing the fully mesh or ring network architecture.

Accordingly, the analyst (or consultant) would be able to compare technology alternatives for the network architectures and management strategies for the business solutions. Moreover, the analyst would be able to quantify the savings of one business solution versus another and identify the areas for cost reduction. Furthermore, by comparing the business solutions, the analyst would be able to determine the business solution for optimizing the operations and management for the selected network architectural technology for the telecommunications network.

Ngi (paragraphs [0028]-[0029]) teaches a computer program product comprising a computer-readable memory storing statements and instructions for use in the execution in a computer of a method and a computer data that when used in a computer, causes that computer to calculate network costs in an automated manner by performing the steps of the method taught by Ngi. The method taught by Ngi offers network planning based on customer demand using generic network model to demonstrate the benefits of one network architecture or topology versus other network architecture or topology.

Further, Ngi (paragraphs [0031]-[0033]) and [0097]) teaches the network architecture or topology includes an identification of nodes and physical links in the topology. The network architecture cost is determined based on equipment list

costs as produced by the link budget. Thus, the main focus of the method taught by Ngi is only on offering new products for a network architecture or topology to the customers and comparing the costs of the network architecture or topology to the existing network architecture or topology.

The method taught by Ngi teaches business solutions for network architecture or topology, wherein the capital expenditure and operational expenditure are described as architecture costs, costs to build, own and grow, (paragraphs [0031]-[0033]) and [0097] and Table 2 of Ngi). Hence, the costs for managing and operating the network architecture or topology are excluded from the analysis and the customer (or Service Provider) would not be able to identify the areas for enhancing or reducing the network operating cost. Reducing the operating cost of a network is critical to the survival of any Service Provider.

Further, the method taught by Ngi would not enable the customer (or Service Provider) to assess and quantify the difference between operating and managing of one network architecture or topology and another. Understanding the cost of the new network architecture or topology without understanding the cost of the management and operations of the new network architecture or topology is economically critical to evolving the services and business for the customer (or Service Provider).

There is no mention or suggestion that the network analysis tool and method taught by Ngi selects, engineers, or costs management processes for managing the optical network or topology.

Accordingly, Ngi **does not** teach the limitations of the amended claim 31.

In particular, Ngi **does not** teach the computer-implemented method of the amended claim 31 limitations of: (1) inputting data and options for plurality of network architectures having various technologies and management processes for managing the plurality of network architectures; (2) engineering and costing the plurality of network architectures and the management processes, wherein the management processes comprises network, service and customer management processes and their sub-processes; (3) determining a network architecture cost and a leasing cost for each network architecture of the plurality of network architectures; (4)

determining a management processes cost comprising a network management processes cost and a service and customer management processes cost; (5) determining CAPEX, OPEX, and other financial statistics, as claimed in the present invention.

Accordingly, for at least the reason that Ngi neither describes nor suggests these limitations, it is requested that the rejection be removed.

Regarding Claim 32:

As discussed above, Ngi **does not** teach the limitations of the amended claim 31.

Claim 32 is dependant on the amended claim 31 and has all the limitations of the amended claim 31. Claim 32 has been amended by introducing additional limitations to better define the invention.

The amended claim 32 provides:"….. determining one or more of the following business parameters: capital expenditure (CAPEX), wherein the CAPEX comprises a network architecture cost, taxes, interests, and depreciation and amortization (D/A) expenses; operational expenditure (OPEX), wherein the OPEX comprises a management processes cost, a leasing cost, and sales, general and administration (SG&A); revenue; capacity; return on investment (ROI); earnings before interest, taxes, and depreciation and amortization (EBITDA); earnings before interest and taxes (EBIT); the CAPEX as percentage of the revenue; the OPEX as percentage of the revenue; the D/A as percentage of the revenue; the SG&A as percentage of the revenue; and total expenditure as percentage of the revenue, wherein the total expenditure comprises the CAPEX and the OPEX."

Ngi (paragraph [0119]) states: "Table 2 below illustrates some of the other possible business parameters that may be calculated, and upon which advanced network business reports may be generated."

Table 2 of Ngi discloses that "the capital expenditure is described as the capital cost breakdown for build, own, grow", and measured by "total capital cost requirement", and the operational expenditure is described as the operational cost

breakdown for build, own, grow", and measured by "total operational cost requirement". The other possible business parameters include Return On Assets (ROA), Return On Investment (ROI), Net Present Value (NPV), Total Cost of Operation (TCO), and Discounted Cash Flow which is described as Time value of money.

There is no mention or suggestion that the method of calculating the business parameters is based on engineering and costing of the management processes for managing the network architecture or topology as claimed in the present invention.

Further, Ngi **does not** disclose that the CAPEX comprises a network architecture cost, taxes, interests and depreciation and amortization (D/A) expenses; and the OPEX comprises a management processes cost, a leasing cost, and sales, general and administration (SG&A) expenses as claimed in the amended claim 32.

Moreover, Ngi **does not** disclose the other financial statistics including, among others, earnings before interest, taxes, and depreciation and amortization (EBITDA); earnings before interest and taxes (EBIT); the CAPEX as percentage of the revenue; the OPEX as percentage of the revenue; the D/A as percentage of the revenue; the SG&A as percentage of the revenue; and total expenditure as percentage of the revenue, wherein the total expenditure comprises the CAPEX and the OPEX, as claimed in the present invention.

Accordingly, for at least the reason that Ngi neither describes nor suggests these limitations, it is requested that the rejection be removed.

Regarding Claim 35:

As discussed above, Ngi **does not** teach the limitations of the amended claim 31.

Ngi **does not** disclose the OPEX comprises a management processes cost, a leasing cost, and sales, general and administration (SG&A) expenses. Hence, the leasing cost of the facility and equipment is excluded from the total cost of the business solution taught by Ngi.

Claim 35 is a dependant claim and has all the limitations of the parent amended claim 31. Claim 35 has been amended by introducing additional limitations to better define the invention.

The amended claim 35 provides: "....determining a network architecture cost and a leasing cost for the network architecture for the business solution."

Accordingly, for at least the reason that Ngi neither describes nor suggests these limitations, it is requested that the rejection be removed.

Regarding Claim 36:

As discussed above, Ngi **does not** teach the limitations of the amended claim 31.

Claim 36 is a dependant claim and has all the limitations of the parent amended claim 31. Claim 36 has been amended by introducing additional limitations to better define the invention.

The amended claim 36 provides: "...engineering one or more of the following network management processes: inside plant maintenance, outside plant maintenance, network engineering, network provisioning, installation, testing, and repairs for managing the network architecture for the business solution; and engineering one or more of the following service and customer management processes: customer relationship management (CRM), work order management (WOM), network inventory management (NIM), service activation and provisioning (SAP), fault management (FM), performance management (PM), accounting and billing, and security management for managing the network architecture for the business solution."

Ngi **does not** disclose selecting, engineering, and costing management processes for managing the network architecture or topology, wherein the management processes comprise network, service, and customer management processes as claimed in the amended claim 36.

Accordingly, for at least the reason that Ngi neither describes nor suggests these limitations, it is requested that the rejection be removed.

Conclusion:

Ngi teaches network planning based on customer demand using generic network model to demonstrate the benefits of one network architecture or topology versus other network architecture or topology. The modeling focuses on traditional SONET and next generation SONET for optical networks. The capital expenditure is described as capital cost breakdown to build, own, and grow of the network architecture or topology. The operational expenditure is described as operational cost breakdown to build, own and grow of the network architecture or topology. Hence, the costs for managing and operating the network architecture or topology are excluded from the total cost of the business solution.

Ngi fails to disclose several of the claims 1, 2, 5, 20, 28, 31, 32, 35, and 36 limitations.

In particular, Ngi fails to disclose, among others, the following limitations of the OMCS tool:

(1) means for inputting data and options for plurality of network architectures and management processes for managing the plurality of network architectures.

(2) means for engineering the plurality of network architectures and determining a network architecture cost and a leasing cost for each network architecture of the plurality of network architectures.

(3) means for engineering the management processes, wherein the management processes comprises network, service and customer management processes for managing the plurality of network architectures, wherein

(a) the network management processes comprises one or more of the following processes: inside plant maintenance; outside plant maintenance; network engineering; network provisioning; installation; testing; and repairs; and

(b) the service and customer management processes comprises one or more of the following processes: customer relationship management (CRM); work order management (WOM); network inventory management (NIM); service activation and provisioning (SAP); fault management

(FM); performance management (PM); accounting and billing; and security management.

(4) means for determining a network management processes cost for each of the network management processes for the network elements of the network architecture, wherein the network management processes cost is computed based on whether the operations of these network management processes is performed manually, using mechanized systems (or OSS) or both based on the Service Provider operating environment.

(5) means for determining a service and customer management processes cost for each of the service and customer management processes (including their associated sub-processes) for the links of the network architecture, wherein the service and customer management processes cost is computed based on whether the operations of these service and customer management processes is performed manually, using mechanized systems (or OSS) or both based on the Service Provider operating environment.

(6) means for determining a management processes cost, wherein the management processes cost comprises the network management processes cost and the service and customer management processes cost.

(7) means for determining OPEX, wherein the OPEX comprises a management processes cost, a leasing cost, and sales, general and administration (SG&A) expenses.

(8) means for determining CAPEX, wherein the CAPEX comprises a network architecture cost, taxes, interests and depreciation and amortization (D/A) expenses.

It is respectfully submitted that the anticipation rejection of the Examiner in view of Ngi reference has been traversed.

Accordingly, for at least the reason that Ngi neither describes nor suggests these limitations, it is requested that the rejection be removed and the claims be allowed.

Applicant Arguments with regard to the rejection under 35 USC §103

With regard to section 16 of the Action, claims 3, 4, 6-10, 15, 16-19, 21-27, 29, 30, 33, 34, 37, and 38 were rejected under 35 U.S.C. 103 (a) as being unpatentable over Ngi in view of EURESCOM Project P901-PF Extended investment analysis of telecommunication operator strategies:

Deliverable 1: Investment analysis framework definition and requirements specification (hereinafter referred to as D1).

Deliverable 2: Investment Analysis Modeling (hereinafter referred to as D2).

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.

D1:

The P901 Project concentrates on quantitative analyses, relying on the establishment and use of a common assessment framework, including common models for costing, market assessment, competitor behavior and external effects, and risk analysis. D1 discloses a methodology and framework for enabling a harmonized evaluation of different types of telecommunication operator investment projects, (D1, Volume 2: page i, paragraph 3).

The extended telecommunication operator investment analysis framework comprises scenario description, that focuses on regulation, service, competition, and technology; and investment project definition/selection, that focuses on marketing, strategy, and technology, (D1, Volume 2: Page 4, Figure 4). The scenarios for each investment project define a set of parameters and variables that are related to costs, market, and risk. The network architecture cost is described as a time series of cost

evolution and volume of each network element, (D1, Volume 2: page 5, paragraph 1; page 14, paragraph 3).

The network architecture scenario is defined in a shopping list, which indicates how the network is rolled out during the study period. The shopping list defines the amount of equipment and services needed in the network as a function of time, (D1, Volume 2: page 74, paragraph 5).

The revenue is determined using a service connection tariff and is estimated by a certain annual tariff for each service per connected customer. In general, both connection tariffs and usage tariffs are time series over the study period, (D1, Volume 2: page 75, paragraph 4).

The OA&M costs are divided into maintenance and O&A (operations and administration), wherein the maintenance comprises the cost of repair parts and the cost of repair work as function of the cost of labour, MTBR (mean time between repairs), and MTTR (mean time to repair). The operation & administration costs are included manually and typically driven by services in terms of the number of customers or the number of critical network elements, (D1, Volume 2: page 77, paragraph 1).

The CAPEX is described as a time series and the reinvestment rate is described as function of CAPEX, depreciation, ΔWorkingCapital and EBIT as shown below, (D1, Volume 2: page 39, paragraph 3)

$$\mathrm{Re}investmentrate = \frac{CAPEX - Dpreciation + \Delta WorkingCapital}{EBIT(1-T)}$$

D2:

D2 teaches the Investment, operation, administration, and maintenance cost modeling to be used in the P901 Project. D2 focuses on evaluation of telecommunication investment projects related with establishing new service platforms, such as IP-based fixed or wireless multimedia networks, fixed mobile convergence, based on new telecommunications technology and new internetworking solutions. The project aims at extended horizontal investment and techno-economic analyses and concentrates on quantitative analyses, relying on the establishment and use of a

common assessment framework, including common models for costing, market assessment, competitor behavior and external effects, and risk analysis, (D2, Volume 2: page 1, paragraph 3).

In the cost model, the cost evolution of network components is described as a function of time, (D2, Volume 2: page 2, paragraph 1). The cost has fixed and variable components as shown in Figure 13 of D2. When building a new network architecture or upgrading an existing one, an operator has a set of technologies to choose, (D2, Volume 2: page 3, paragraph 2).

In the P901 project, the focus is investment projects which are mainly based on services and networks. The investment projects do not cover all the business of a telecommunication company. Therefore, several cost categories are not considered as a part of OA&M costs and are not described in this document, (D2, Volume 2: page 32, paragraph 3). Accordingly, a pure service investment project would avoid including the network and infrastructure processes. In addition, all the processes related to leased facilities or leased equipment should be ignored by the investment process, (D2, Volume 2: page 33, paragraph 6).

The OA&M costs are divided into maintenance and O&A (operations and administration), wherein the maintenance comprises the cost of repair parts and the cost of repair work as function of the cost of labour, MTBR (mean time between repairs), and MTTR (mean time to repair). The operation & administration costs are included manually and typically driven by services in terms of the number of customers or the number of critical network elements, (D2, Volume 2: pages 36-42, Sections 3.5-3.7; pages 42-54, Section 4).

The revenue requirement over time is calculated as:

$$\text{Re}\,venuereq.(t) = OPEX(t) + Depreciation(t) + ixNBV(t-1)$$

where: OPEX(t) refers to cash operating expenditure in year t, Depreciation(t) is the current depreciation in year t, i the relevant discount rate of cost of capital and NBV(t) is the closing net book value of relevant assets at the end of year t-1, (D2, Volume 2: page 48, paragraph 4, equation (1)).

Hence, in D1 and D2, the network architecture cost, the CAPEX, and the OPEX are described as time series.

Further, when building new network architecture or upgrading an existing one, the operator **only** has a set of technologies to choose for the new network architecture. In all projects the OA&M costs are divided into maintenance and O&A (operations and administration). The maintenance cost is described as function of the cost of labour, MTBR, and MTTR. The operation & administration costs are included manually. Moreover, D1 and D2 **do not** cover all the business of a Service Provider (or a telecommunication company) and the leasing cost of facilities and equipment are excluded from the total cost of the business solution.

Therefore, the methodology and framework taught by D1 and D2 exclude several critical elements of the business of the Service Provider (or the telecommunication company) including the costs for managing and operating the network architecture. Hence, the methodology and framework taught by D1 and D2 would not enable the Service Provider to quantify the management and operating cost of the new network architectural technology and identify the areas for enhancing or reducing the network operating cost which is critical to the survival of any Service Provider (or telecommunication company).

"There are three possible sources for a motivation to combine references: the nature of the problem to be solved, the teachings of the prior art, and the knowledge of persons of ordinary skill in the art." *In re Rouffet,* 149 F.3d 1350, 1357, 47 USPQ2d 1453, 1457-58 (Fed. Cir. 1998)."

The test for obviousness is what the combined teachings of the references would have suggested to one of ordinary skill in the art, and **all teachings in the prior art must be considered to the extent that they are in analogous arts**... *In re Young*, 927 F.2d 588, 18 USPQ2d 1089 (Fed. Cir. 1991). In particular, a prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984).

Further, in order to support a rejection under 35 U.S.C. §103, the prior art reference should show or suggest *every* limitation in the claims. The combination of

Ngi and D1 and D2 fails to satisfy this burden for several reasons, as will be described below.

The combination of Ngi and D1 and D2 neither describes nor suggests the means for selecting, engineering, and costing plurality of network architectures having various technologies and management processes for managing the plurality of network architectures:

With regard to Ngi, Applicant has clearly shown above (and repeats the argument below) that Ngi neither describes nor suggests several elements of the claimed invention. The tool taught by Ngi fails to disclose, among others, (1) means for selecting, engineering, and costing plurality of network architectures having various technologies and management processes for managing the plurality of network architectures; (2) means for determining a network architecture cost and a leasing cost for each network architecture of the plurality of network architectures; (3) means for determining a management processes cost for each of the management processes, wherein the management processes comprise network, service and customer management processes and the management processes cost is computed based on whether the operations of these management processes is performed manually, using mechanized systems (or OSS) or both based on the Service Provider operating environment; and (4) means for determining OPEX, wherein the OPEX comprises a management processes cost, a leasing cost, and sales, general and administration (SG&A) expenses; CAPEX, wherein the CAPEX comprises a network architecture cost, taxes, interests and depreciation and amortization (D/A) expenses; and other financial statistics.

Further, D1 and D2 is a non-analogous art to Ngi which teaches network planning based on customer demand using generic network model to demonstrate the benefits of one network architecture or topology versus other network architecture or topology. The network model, taught by Ngi, focuses on traditional SONET and next generation SONET for optical networks. In the model, the capital expenditure and the operational expenditure are described as architecture costs, costs to build, own and

grow. Hence, the costs for managing and operating the network architecture or topology are excluded from the total cost of the business solution.

D1 and D2 teach a methodology and framework for enabling a harmonized evaluation of different types of telecommunication operator investment projects. The methodology and framework focus on evaluation of telecommunication investment projects related with establishing new service platforms, such as IP-based fixed or wireless multimedia networks, fixed mobile convergence, based on new telecommunications technology and new internetworking solutions. D1 and D2 focus is investment projects which are mainly based on services and networks. D1 and D2 **do not** cover all the business of a telecommunication company (or a Service Provider). Therefore, several cost categories are excluded from the OA&M costs and are not described in D1 or D2. Further, a pure service investment project **does not** include the network and infrastructure processes as well as all the processes related to leased facilities or leased equipment.

The network architecture cost, taught by D1 and D2, is described as a time series of cost evolution and volume of each network element. The OA&M costs are divided into maintenance and O&A (operations and administration), wherein the maintenance cost is described as function of the cost of labour, MTBR, and MTTR. The operation & administration costs are included manually and typically driven by services in terms of the number of customers or the number of critical network elements. The capital expenditure (CAPEX) and the operational expenditure (OPEX) are described as time series.

D1 and D2 reference, which is a non-analogous art to Ngi, fails to overcome the inadequacies of Ngi.

In fact, Applicant respectfully submits that one would not be motivated to modify Ngi to meet the language of the claimed invention for at least the reason that Ngi *teaches away from the claimed invention*, because Ngi teaches only the use of generic network model to demonstrate the benefits of one network architecture or topology versus other network architecture or topology, wherein the CAPEX and

OPEX are described based on costs to build, own and grow of the network architecture.

There is no mention or suggestion that Ngi addresses the management processes for managing the optical network architecture or topology and, hence no description or quantification of the management processes cost for managing the network architecture or topology in the total cost of the business solution.

With regard to the motivation to combine Ngi with D1 and D2, it is respectfully submitted that D1 and D2, which teach a methodology and framework for investment projects which are mainly based on services and networks and **do not** cover all the processes of the business of a telecommunication company (or Service Provider) including most of the OA&M costs, the network and infrastructure processes, and all the processes related to leased facilities or leased equipment; and wherein the capital expenditure and the operational expenditure are described as time series, *is not an analogous art to Ngi,* which teaches method and apparatus for network planning based on customer demand using generic network model to demonstrate the benefits of one network architecture or topology versus other network architecture or topology; and wherein the capital expenditure and the operational expenditure are described as architecture costs, costs to build, own and grow. For at least this reason, Applicant's respectfully submit that the combination of D1 and D2 with Ngi is improper, and request that it be withdrawn.

Accordingly, for at least the reason that no motivation can be found for the modification suggested by the Examiner, it is requested that the rejection be withdrawn.

Regarding Claim 3:

As discussed above, Ngi fails to disclose several of the amended claims limitations. The D1 and D2 reference, which is a non-analogous art to Ngi, fails to overcome the inadequacies of Ngi.

Claim 3 is a dependent claim and has all the limitations of the parent amended claim 1. Claim 3 has been amended by adding additional limitations to better define the invention.

The amended claim 3 provides:"…..

- means for inputting technology options comprising one or more of the following technology: time division multiplexing (TDM), asynchronous transfer mode (ATM), frame relay (FR), Internet protocol (IP), virtual private network (VPN), multi protocol label switching (MPLS), and optical Ethernet including fiber, synchronous optical network (SONET), resilience packet ring (RPR), and dense wavelength division multiplexing (DWDM) for a network architecture for a business solution; and
- means for inputting management processes options for the network management processes and the service and customer management processes for managing the network architecture for the business solution."

The network model, taught by Ngi, focuses on traditional SONET and next generation SONET for optical networks.

The methodology and framework taught by D1 and D2 focus on evaluation of telecommunication investment projects related with establishing new service platforms, such as IP-based fixed or wireless multimedia networks, fixed mobile convergence, based on new telecommunications technology and new internetworking solutions.

There is no mention or suggestion that the tool taught by Ngi or the methodology and framework taught by D1 and D2 describe any of the network architectures technologies in the amended claim 3. Further, there is no mention or suggestion that these tools select management processes for managing any of the network architectures technologies in the amended claim 3.

Accordingly, for at least the reason that the combination of Ngi and D1 and D2 fails to teach or suggest this claimed limitation it is respectfully requested that the rejection be withdrawn.

Regarding Claim 4:

As discussed above, Ngi fails to disclose several of the amended claims limitations. The D1 and D2 reference, which is a non-analogous art to Ngi, fails to overcome the inadequacies of Ngi.

Claim 4 is a dependent claim and has all the limitations of the parent amended claim 1. Claim 4 has been amended by adding additional limitations to better define the invention.

The amended claim 4 provides: "…means for determining one or more of the following business parameters: capital expenditure (CAPEX), wherein the CAPEX comprises a network architecture cost, taxes, interests, and depreciation and amortization (D/A) expenses; operational expenditure (OPEX), wherein the OPEX comprises a management processes cost, a leasing cost, and sales, general and administration (SG&A); revenue; capacity; return on investment (ROI); earnings before interest, taxes, and depreciation and amortization (EBITDA); earnings before interest and taxes (EBIT); the CAPEX as percentage of the revenue; the OPEX as percentage of the revenue; the D/A as percentage of the revenue; the SG&A as percentage of the revenue; and total expenditure as percentage of the revenue, wherein the total expenditure comprises the CAPEX and the OPEX."

The Examiner states, at page 9 of the office action:

"Ngi **does not** explicitly disclose wherein the CAPEX comprises a network architecture cost, taxes, interests and depreciation and amortization (D/A) expenses; and the OPEX comprises a management processes cost, a leasing cost, and sales, general and administration (SG&A) expenses."

However, EURESCOM P901-PF discloses wherein the CAPEX comprises a network architecture cost (D1, Volume 2: page 5, paragraph 1), taxes, interests, and depreciation and amortization (D/A) expenses (D1, Volume 2: page 39, paragraph 3; and the OPEX comprises a management processes cost (D2, Volume 2: pages 34-35, Section 3.4), a leasing cost (D1, Volume 2: page 86, paragraph 7; page 87, paragraph 1), and sales (D1, Volume 2: page 38, paragraph 10), general and

administration (SG&A) expenses (D1, Volume 2: page 6, paragraph 9; page 7, paragraphs 4 and 10).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Ngi with the teachings of EURESCOM to include more business parameters in order to enable a comprehensive business decision.

The combination of Ngi and D1 and D2 neither describes nor suggests the CAPEX comprises a network architecture cost, taxes, interests and depreciation and amortization (D/A) expenses; and the OPEX comprises a management processes cost, a leasing cost, and sales, general and administration (SG&A) expenses:

EURESCOM P901-PF: (D1, Volume 2: page 5, paragraph 1) states: "...network architecture. Cost evolution and volume of each network element (time series)…."

And (D1, Volume 2: page 39, paragraph 3) states: "

$$\text{Re}\, investmentrate = \frac{CAPEX - Dpreciation + \Delta WorkingCapital}{EBIT(1-T)}$$

…. another way for estimating the project's terminal value at the end of the forecast period is by reference to multiple of earnings before interest, tax, depreciation and amortization (EBITDA)….."

Hence, the network architecture cost taught by D1 is described as time series.

Further, although the result of the Examiner's search came up with CAPEX, taxes, interest, and depreciation and amortization **on one page**, (D1, Volume 2: page 39, paragraph 3), the result **does not** disclose that the CAPEX taught by D1 comprises a network architecture cost, taxes, interests and depreciation and amortization (D/A) expenses as claimed in the present invention. The interest, tax,

depreciation and amortization (D1, Volume 2: page 39, paragraph 3) are for the definition of EBITDA.

Accordingly, neither Ngi nor D1, separately or in combination, discloses the CAPEX comprises a network architecture cost, taxes, interests, and depreciation and amortization (D/A) expenses as claimed in the present invention.

EURESCOM P901-PF (D2, Volume 2: pages 34-35, Section 3.4) states: ".... the identification of the cost factors or drivers, which represent the source of the costs. The driving parameters enable the quantification of the cost volume. The next tables present, for a few example of OA&M processes, the cost factors and driving parameters…….The intention is to provide a common framework for cost modeling.

….This depends strongly on the cost type and on the available data.

Within a specific investment project, only the operational activities, which have a sufficient impact on the results should be modeled and included."

The OA&M cost factors and driving parameters identified in Section 3.4 of D2 are based on the Telecom Operations Map, which uses the ITU-T TMN model to organize core business processes. In P901 approach, the focus is investment projects which are mainly based on services and networks. These projects do not cover all the business of a telecommunication company. Therefore, several cost categories are not considered as a part of running or OA&M costs and are not described in P901. Further, not all the processes are relevant for a specific investment project and a pure service investment project would avoid including the network and infrastructure processes. In addition, all the processes related to leased facilities or leased equipment are ignored by the investment process. (D2, Volume 2: pages 31-33 Sections 3.2.4 and 3.3).

"The revenue requirement over time is calculated as:

$$\text{Re}\,venuereq.(t) = OPEX(t) + Depreciation(t) + ixNBV(t-1) \qquad (1)$$

where: OPEX(t) refers to cash operating expenditure in year t, Depreciation(t) is the current depreciation in year t, i the relevant discount rate of cost of capital and NBV(t)

is the closing net book value of relevant assets at the end of year t-1, (D2, Volume 2: page 48, paragraph 4, equation (1)).

Hence, the OPEX taught by D2, refers to cash operating expenditure in a year, (D2, Volume 2: page 48, paragraph 4, Equation 1).

Clearly, the OPEX taught by D2 **does not** comprise a management processes cost, a leasing cost, and sales, general and administration (SG&A) expenses as claimed in the present invention.

Accordingly, neither Ngi nor D2, separately or in combination, discloses the OPEX comprises a management processes cost, a leasing cost, and sales, general and administration (SG&A) expenses as claimed in the present invention.

As discussed above, (D2, Volume 2: page 33 Section 3.3), states: "… all the processes related to leased facilities or leased equipment should be ignored by the investment process." Hence, the OPEX taught by D2 **does not** comprise, among others, **a leasing cost** as claimed in the present invention.

Further, EURESCOM P901-PF (D1, Volume 2: page 86, paragraph 7; page 87, paragraph 1) states that the input data for the INVAN tool (INVestment ANalysis of general telecommunication network) includes "Variation of costs" wherein the variation of the purchasing and rental costs should be specified as a time series; and "Additional cost information" including the rental costs. Using these input data, INVAN calculates the typical investment evaluation criteria: NPV, IRR, and PP.

Hence, the **leasing or rental cost** taught by D1 is used as input data to the INVAN tool to calculate NPV, IRR, and PP. Thus, the OPEX taught by D2 **does not** comprise, among others, **a leasing cost** as claimed in the present invention.

Further, EURESCOM P901-PF (D1, Volume 2: page 38, paragraph 10) states: "....

Accounts receivable = credit sales per day · length of collection period "

Although the result of the Examiner's search came up with the word "sales" on page 38, paragraph 10 of D1, the result **does not** disclose that the OPEX

taught by D2 comprises a management processes cost, a leasing cost, and sales, general and administration (SG&A) expenses as in the claimed invention.

Moreover, EURESCOM P901-PF (D1, Volume 2: page 6, paragraph 9; page 7, paragraphs 4 and 10) states: "…..

- Administration costs that are related to the customer base."

And

"…The outputs are used in the cost module to calculate network costs and administrative costs."

Although the result of the Examiner's search came up with the word "administration" on pages 6 and 7 of D1, the result **does not** disclose that the OPEX taught by D2 comprises a management processes cost, a leasing cost, and sales, general and administration (SG&A) expenses as in the claimed invention.

Accordingly, neither Ngi nor D1 and D2, separately or in combination, discloses the OPEX comprises a management processes cost, a leasing cost, and sales, general and administration (SG&A) expenses as in the claimed invention.

As discussed above, neither Ngi nor D1 and D2, separately or in combination, discloses that the CAPEX comprises a network architecture cost, taxes, interests and depreciation and amortization (D/A) expenses; and the OPEX comprises a management processes cost, a leasing cost, and sales, general and administration (SG&A) expenses as in the claimed invention.

The Examiner, at pages 9 and 10 of the office action, states:

EURESCOM P901-PF further discloses wherein the business parameters further comprise:

Revenue (D1, Volume 2: page 4, Figure 4; page 8, paragraphs 1 and 2; page 12, paragraph 6);

capacity (D1, Volume 2: page 12, paragraph 17; page 13, Figure 7);

return on investment (ROI) (D1, Volume 2: page 32, paragraph 2; page 35, paragraph 7);

earnings before interest, taxes, and depreciation and amortization (EBITDA) (D1, Volume 2: page 39, paragraph 3);
earnings before interest and taxes (EBIT) (D1, Volume 2: page 39, paragraph 3);
OPEX as percentage of revenue (D2, Volume 2: page 48, paragraph 4);
total expenditure as percentage of revenue (D2, Volume 2: page 5, Figure 3; page 8, Figure 4).

Although the result of the Examiner's search came up with the above business parameters on various pages of D1 and D2, the result **does not** disclose that the method of computing these parameters in D1 and D2 is similar to the method of computing the business parameters in the claimed invention. This is because the method taught by D1 and D2 describe CAPEX, OPEX, network architecture cost and revenue as time series, as discussed earlier.

In contrast, the business parameters in the amended claim 4 are computed based on the CAPEX and OPEX, wherein the CAPEX comprises a network architecture cost, taxes, interests and depreciation and amortization (D/A) expenses; and the OPEX comprises a management processes cost, a leasing cost, and sales, general and administration (SG&A) expenses as claimed in the present invention, paragraphs [0154]-[0157] of the present invention.

The D1 and D2 reference, which is a non-analogous art to Ngi, fails to overcome the inadequacies of Ngi. Accordingly, for at least the reason that the combination of Ngi and D1 and D2 fails to teach or suggest this claimed limitation it is respectfully requested that the rejection be withdrawn.

Regarding Claim 6:

As discussed above, Ngi fails to disclose several of the amended claims limitations. Moreover, the D1 and D2 reference, which is a non-analogous art to Ngi, fails to overcome the inadequacies of Ngi.

Claim 6 is a dependent claim and has all the limitation of the parent amended claim 1. Claim 6 has been amended by adding additional limitations to better define the invention.

The amended claim 6 provides: "….means for engineering the network management processes and the service and customer management processes for managing the network architecture for the business solution."

As discussed above, neither Ngi nor D1 and D2, separately or in combination, discloses means for selecting, engineering, and costing management processes for managing selected network architectures having various technologies. Ngi, D1 and D2 only disclose the ability to select a new technology for the network architecture, (paragraph [0055] of Ngi) and (D2, Volume 2: page 3, paragraph 2).

Accordingly, for at least the reason that the combination of Ngi and D1 and D2 fails to teach or suggest this claimed limitation it is respectfully requested that the rejection be withdrawn.

Regarding Claim 7:

As discussed above, Ngi fails to disclose several of the amended claims limitations. Moreover, the D1 and D2 reference, which is a non-analogous art to Ngi, fails to overcome the inadequacies of Ngi.

Claim 7 is a dependent claim and has all the limitation of the parent amended claim 1. Claim 7 has been amended by adding additional limitations to better define the invention.

The amended claim 7 provides: "….means for displaying the business parameters in tables and graphical charts for said business solutions over said pre-determined study period."

EURESCOM P901-PF (D1, Volume 2: page 6, paragraph 5; page 7, paragraph 3; page 75, paragraph 7; page 76, paragraph 2) states: "...Each evolutionary path is defined by a number of technology upgrades within a given period called the study period or project lifetime.... "; "…the sum of total discounted investment within the study period…"; "... This value represents the total cost for constructing and running the network over the study period."; "In an investment scenario where most of the expenditure happens at the beginning of the study period…"

Although, the Examiner's search came up with the word "study period" on these pages, it **does not** disclose the limitation of the amended claim 7 wherein the

business parameters for the business solutions are displayed in tables and graphical charts over the study period, wherein the business solutions comprising alternative network architectures and management processes for managing the alternative network architectures. Further, the concept of the "study period" is well known in the art.

Ngi, (paragraphs [0015], [0020] and [0033] as well as paragraphs [0033], [0097], and [0112]-[0114]), **does not** disclose the study period. Further, Ngi fails to disclose many of the amended claims limitations.

Accordingly, for at least the reason that the combination of Ngi and D1 and D2 fails to teach or suggest this claimed limitation it is respectfully requested that the rejection be withdrawn.

Regarding Claims 8, 9, 10, 15, 16, 17, 18, and 19:

As discussed above, Ngi fails to disclose several of the amended claims limitations. Moreover, the D1 and D2 reference, which is a non-analogous art to Ngi, fails to overcome the inadequacies of Ngi.

Claims 8, 9, 10, 15, 16, 17, 18, and 19 are dependent claims and each of the dependent claims has all the limitations of the parent amended claim 1. Claims 8, 9, 10, 15, 16, 17, 18, and 19 have been amended by adding additional limitations to better define the invention.

Since the combination of Ngi and D1 and D2 fails to teach or suggest several of the amended claims limitations it is respectfully requested that the rejection be withdrawn.

Regarding Claims 21, 22, 23, 24, 25, 26, 27, 29, and 30:

As discussed above, Ngi fails to disclose several of the amended claims limitations. Moreover, the D1 and D2 reference, which is a non-analogous art to Ngi, fails to overcome the inadequacies of Ngi.

Claims 21, 22, 23, 24, 25, 26, 27, 29, and 30 are dependent claims and each of the dependent claims has all the limitations of the parent amended claim 20.

Claims 21, 22, 23, 24, 25, 26, 27, 29, and 30 have been amended by adding additional limitations to better define the invention.

Since the combination of Ngi and D1 and D2 fails to teach or suggest several of the amended claims limitations it is respectfully requested that the rejection be withdrawn.

Regarding Claims 33, 34, 37, and 38:

As discussed above, Ngi fails to disclose several of the amended claims limitations. Moreover, the D1 and D2 reference, which is a non-analogous art to Ngi, fails to overcome the inadequacies of Ngi.

Claims 33, 34, 37, and 38 are dependent claims and each of the dependent claims has all the limitations of the parent amended claim 31. Claims 33, 34, 37, and 38 have been amended by adding additional limitations to better define the invention.

Since the combination of Ngi and D1 and D2 fails to teach or suggest several of the amended claims limitations it is respectfully requested that the rejection be withdrawn.

Neither Ngi nor D1 and D2, separately or in combination, teach the tool and method of the independent amended claims 1, 20, and 31 of the present invention.

The amended claims 2-19 are dependent claims and each of the dependent claims has all the limitations of the parent amended claim 1.

The amended claims 21-30 are dependent claims and each of the dependent claims has all the limitations of the parent amended claim 20.

The amended claims 32-38 are dependent claims and each of the dependent claims has all the limitations of the parent amended claim 31.

Accordingly, it is not obvious to one of ordinary skill in the art reading Ngi and D1 and D2 to produce the limitations of the claimed invention.

Therefore, it is respectfully submitted that the obviousness rejection of the Examiner in view of Ngi and further in view of D1 and D2 has been traversed.

Accordingly, for at least the reason that the combination of Ngi and D1 and D2 neither describes nor suggests the claims limitations, it is requested that the rejection be removed and the claims be allowed.

With regard to section 17 of the Action, claims 11-14 were rejected under 35 U.S.C. 103 (a) as being unpatentable over Ngi in view of EURESCOM Project P901-PF and in view of Arbel et al., U.S. Patent Application Publication Number US 2004/0008673 A1 (hereinafter referred to as Arbel).

Arbel

Arbel teaches a novel telecommunications node architecture that comprises a novel technique for overhead processing. Some embodiments of the present invention advantageously exhibit a smaller footprint, reduced cost, and lower power consumption than some architectures in the prior art. The illustrative embodiment comprises a plurality of input processors, a switch, an overhead processor, and a plurality of output processors, (Arbel, Abstract).

Arbel (paragraph [0025]) states: "The present invention enables a novel node architecture that eliminates some of the redundant processing logic of the prior art, thereby reducing the cost, footprint, and power consumption of every node in a network. The present invention divides the deframing and overhead generation tasks into two classes: one in which the tasks are performed concurrently for each input port, and one in which the tasks are performed sequentially for each input port. The latter class permits the use of a single instance of processing logic to perform the corresponding tasks for all of the links. Although sequential processing can take more time than concurrent processing, this might not present a problem as long as the sequential processing can be completed within the appropriate time frame."

Further, Arbel (paragraph [0074]) states: "FIG. 10 depicts a block diagram of the salient components of multiport cell processor 910-e-q, where $q \varepsilon \{1, 2, K\}$, in accordance with the illustrative embodiment. Multiport cell processor 910-e-

q comprises cell processor 1010-e-q and memory 1030-e-q. Multiport cell processor 910-e-q receives an input overhead cell via 908-e-q, and possibly one or more data outputs from other multiport cell processors via 920, generates an output overhead cell, and outputs the output overhead cell via 925. Since processing the input overhead cell typically varies depending on the input port from which the input overhead cell is received, prior art systems have employed redundant overhead processing logic for each input port. As discussed above, this approach has the disadvantage of requiring more processing logic at the node, which increases the footprint, cost, and power consumption. In the present invention, in contrast, multiport cell processor 910 comprises a single cell processor 1010, and uses this single cell processor in conjunction with memory 1030 in a novel manner, as described below, to process overhead cells from all of the input ports."

Hence, Arbel discloses a node architecture that eliminates some of the redundant processing logic of the prior art, thereby reducing the cost, footprint, and power consumption of every node in a network. The focus of Arbel teaching is on the internal node architecture.

Arbel **does not** disclose a tool for planning network architecture or management network for managing the network architecture. Further, it is well known in the art that node characteristics or attributes comprise cost, footprint, and power consumption of the node.

Arbel is a non-analogous art to Ngi which teaches method and apparatus for integrated network planning and business modeling based on customer demand using generic network model to demonstrate the benefits of one network architecture or topology versus other network architecture or topology.

Arbel is a non-analogous art to D1 and D2 which teach extended investment analysis of telecommunication operator strategies that concentrate on quantitative analyses, relying on the establishment and use of a common assessment framework, including common models for costing, market assessment, competitor behavior and external effects, and risk analysis.

Regarding Claims 11-14:

As discussed above, Ngi fails to disclose several of the amended claims limitations. Moreover, the D1 and D2 reference, which is a non-analogous art to Ngi, fails to overcome the inadequacies of Ngi.

Further, Arbel, which is a non-analogous art to Ngi and D1 and D2, fails to overcome the inadequacies of Ngi and D1 and D2.

Neither Ngi nor D1 and D2 and Arbel, separately or in combination, teach the tool of the amended claim 1 of the present invention.

Claims 11-14 are dependent claims and each of the dependent claims has all the limitations of the parent amended claim 1. Claims 11-14 have been amended by adding additional limitations to better define the invention.

Accordingly, it is not obvious to one of ordinary skill in the art reading Ngi and D1 and D2 and Arbel to produce the limitations of the claimed invention.

Therefore, it is respectfully submitted that the obviousness rejection of the Examiner in view of Ngi and further in view of D1 and D2 and further in view Arbel has been traversed.

Conclusion

Ngi teaches network planning based on customer demand using generic network model to demonstrate the benefits of one network architecture or topology versus other network architecture or topology. The network model focuses on traditional SONET and next generation SONET for optical networks. In the model, the capital expenditure and the operational expenditure are described as architecture costs, costs to build, own and grow. Hence, the costs for managing and operating the network architecture or topology are excluded from the total cost of the business solution.

Ngi fails to disclose several elements of the claimed invention, as discussed earlier in this paper.

D1 and D2 teach a methodology and framework that focus on evaluation of telecommunication investment projects related with establishing new service platforms, such as IP-based fixed or wireless multimedia networks, fixed mobile convergence, and based on new telecommunications technology and new internetworking solutions. In D1 and D2, the focus is investment projects which are mainly based on services and networks. These projects **do not** cover all the business of a telecommunication company (or Service Provider). Therefore, several cost categories are not considered as a part of OA&M costs and are not described in D1 and D2. Further, a pure service investment project would avoid including the network and infrastructure processes. In addition, all the processes related to leased facilities or leased equipment are ignored by the investment process. Hence, the costs for managing and operating the network architecture or topology are not considered in the investment analysis of telecommunication operator and are not described in D1 and D2.

In D1 and D2, the network architecture cost, the capital expenditure (CAPEX), and the operational expenditure (OPEX) are described as time series. The OA&M cost model comprises the equipment maintenance cost which is described as function of the cost of labour, MTBR, and MTTR; and the operation & administration costs which are included manually and typically driven by services in terms of the number of customers or the number of critical network elements.

The D1 and D2 reference, which is a non-analogous art to Ngi, fails to overcome the inadequacies of Ngi.

Arbel teaches a node architecture that eliminates some of the redundant processing logic of the prior art, thereby reducing the cost, footprint, and power consumption of every node in a network. Arbel, which is a non-analogous art to Ngi as well as D1 and D2, fails to overcome the inadequacies of Ngi as well as D1 and D2. The focus of Arbel teaching is on the internal node architecture and it is well known in the art that node characteristics comprise cost, footprint, and power consumption of the node. Arbel **does not** disclose a tool for planning network architecture or investment analysis of telecommunication operator.

In contrast, the present invention provides a tool and method for assessing business solutions comprising **two levels of networks**: (1) a network architecture that carries the telecommunications services (e.g., voice, data, etc.) and delivers the services to the end users; and (2) a management network for managing the network architecture wherein the management network comprises management processes for network, service, and customer management. The management processes replicate today's operations and management networks for Service Providers.

The OMCS tool, as claimed in the present invention, comprises, among others, (1) means for selecting, engineering, and costing plurality of network architectures having various technologies and management processes for managing the plurality of network architectures; (2) means for determining a network architecture cost and a leasing cost for each network architecture of the plurality of network architectures; (3) means for determining a management processes cost for each of the management processes, wherein the management processes comprise network, service and customer management processes and their sub-processes; and the management processes cost comprises a network management processes cost and a service and customer management processes cost and is computed based on whether the operations of these management processes is performed manually, using mechanized systems (or operations support systems (OSS)) or both based on the Service Provider

operating environment; and (4) means for determining OPEX, wherein the OPEX comprises a management processes cost, a leasing cost, and sales, general and administration (SG&A) expenses; CAPEX, wherein the CAPEX comprises a network architecture cost, taxes, interests and depreciation and amortization (D/A) expenses; and other financial statistics.

Advantageously, the cost for managing and operating the network architecture is integrated with the cost of the network architecture in the total cost of the business solution. Appreciably, the Service Provider (or the telecommunication company) would be able to identify the areas for enhancing or reducing the management and operating cost of the telecommunications network. Reducing the management and operating cost of a telecommunications network is critical to the survival of the Service Provider (or the telecommunication company).

Reconsideration of all pending claims is respectfully requested.

In view of the above amendments and remarks, and having dealt with all of the matters raised by the Examiner, early reconsideration and allowance of this application is respectfully requested.

Respectfully submitted,

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